**SECTION 04340**

**REINFORCED UNIT MASONRY**

PART 1 - GENERAL

**1.01 RELATED SECTIONS**

A. Section 02720 - Site Drainage: Masonry for manholes and catch basins.

B. Section 03200 - Concrete Reinforcement: Furnishing and setting dowels in concrete for masonry.

C. Section 03300 - Cast in place concrete: Concrete footings.

D. Other Sections: Furnishing of bolts, anchors, straps, or other accessories required for securing items to masonry.

**1.02 WEATHER CONDITIONS**

A. Do not lay masonry when air temperature is below 40 degrees Fahrenheit.

**1.03 CODES AND STANDARDS**

A. Comply with:
1. Uniform Building Code, latest adopted edition, published by International Conference of Building Officials.
2. Concrete Masonry Design Manual, latest edition, published by Concrete Masonry Association of California.
3. Title 22, California Administrative Code.
4. Title 24, California Administrative Code.

**1.04 SUBMITTALS**

A. Submit certifications of block to be used on the project.

B. Provide mix designs for all grout and mortar.

**1.05 TESTS AND INSPECTIONS**

A. Tests:
1. Test masonry units in accordance with ASTM Cl40 and T22-94223(e).
2. Test mortar and grout in accordance with T22-94106(c).
3. Make core tests of completed walls in accordance with T22-94106(d). Patch surfaces of walls after samples are obtained.
4. The cost of sampling, boring, and testing will be borne by the Owner.

B. Inspections: Masonry work shall be continuously inspected by a Registered Deputy Inspector who is an employee of a recognized testing laboratory. The selection of the inspector shall be subject to the

approval of the Architect. The cost of inspection shall be borne by the Contractor, but the inspector shall be responsible solely to the Architect.

**1.06 TESTS AND INSPECTIONS**

A. Tests:
1. Test masonry units in accordance with ASTM Cl40.
2. Test mortar and grout in accordance with Section 2-2404 (d) of Title 24.
3. Take core samples and tests in accordance with Section 2-2404 (e) of Title 24.
4. The cost of sampling, boring, and testing will be borne by the Owner.

B. Inspections: Masonry work shall be continuously inspected by an inspector approved by the Office of Architecture and Construction. The cost of inspection will be borne by the Owner.

PART 2 - MATERIALS

**2.01 CONCRETE MASONRY UNITS**

A. Hollow load bearing units: Grade N-1, ASTM C90.
1. Standard concrete block: 8" and l2" wide, 8" high, l6" long, standard grey color.
2. Standard pilaster block: l2" wide, 8″ high, 8″, 12″ and 16″ long as detailed, standard grey color.

B. Use special units for corners, ends, and angles as required. Use open-ended blocks for 4'-0" grout lifts. Use bond beam blocks for horizontal reinforcing bars.

**2.02 OTHER MATERIALS**

A. Portland Cement: Type II, ASTM Cl50.

B. Water: From domestic sources, potable.

C. Aggregate: Clean, hard, sound particles.
1. Mortar sand: ASTM Cl44 except that not less than 3% shall pass a No. l00 sieve.
2. Grout sand: Washed natural sand having hard, strong, durable particles and containing not more than 2% by weight of deleterious substances such as clay, shale, mica or schist.
3. Pea gravel: Not more than 5% passing a 3/8 inch sieve.

D. Hydrated lime: ASTM C207, Type "S".

E. Reinforcing steel: Intermediate grade deformed bars, ASTM A6l5, Grade

60 per Section 03200.

F. Integral waterproofing: "Red Label Suconem" manufactured by Super Concrete Emulsions.

**2.03 MORTAR AND GROUT**

A. Mortar: ASTM Type "S", proportions by loose, dry volumes:

| | |
|---|---|
| Portland cement | l part |
| Hydrated lime (dry) | l/3 part |
| Mortar sand | 3-1/2 parts |
| Compressive strength | 1,800 psi @ 28 days |

B. Grout: Proportions by loose, dry volumes.

| | |
|---|---|
| Portland Cement | l part |
| Grout sand | 3 parts |
| Pea gravel | 2 parts |
| Compressive strength | 2,000 psi @ 28 days |

C. Measurements: Measure materials for mortar and grout by accurate volumes, shovel measurements not acceptable. Do not mix materials before placing in mixer. Consider one sack of cement as one cubic foot.

D. Mixing: Mix water, cement and sand two minutes. Add lime or admixture and additional water and mix ten minutes. Add water for proper workability.

E. Consistency:
1. Mortar: slump 3-4 inches.
2. Grout: to permit pouring without segregation, but able to flow into all joints of the masonry. 9-1/2” max. slump.

F. Retempering: On mortar board in basin formed in mortar, water worked in. Do not retemper grout or mortar that is non-plastic or over one hour old.

PART 3 - EXECUTION

**3.01 INSTALLATION**

A. Surface preparation: Roughen concrete on which masonry is to be placed to expose aggregate, remove dirt or bond reducing coating. Dampen concrete prior to laying masonry or applying bonding agent to clean surface.

B. Laying block:
1. All units shall be clean and dry when laid.
2. Use proper units for all windows, doors, bond beams, lintels and pilasters. Keep cutting at minimum. Cut with power driven abrasive saw only.
3. Bond: Align cells vertically. Lay units in common (running) bond unless otherwise shown.
4. Joints:
5. Minimum thickness 3/8".
6. Concave tooled - All exposed interior and exterior joints to produce dense, slightly concave surface well bonded to block at edges.
7. Cut joints flush or concealed interior surfaces to be plastered or behind base.
8. Lay units in solid, unfurrowed mortar joints full thickness of shell. Fill bed joints solid under first course on concrete.
9. Keep grout side free of mortar. Remove mortar from face of masonry as work progresses.

C. Reinforcing:
1. Bars shall be straight except for bends and hooks.
2. Lap bars 40 diameters at splices.
3. Horizontal steel: Place and lap as work progresses.
4. Provide minimum l/4" diameter steel-ties at 24" o.c. maximum at intersecting masonry walls and partitions.
5. Provide approved metal ties horizontally at 24" o.c. maximum where stack bond occurs.
6. Stabilize or brace vertical bars during grout pours to prevent movement.

D. Grouting:
1. Clean cells and inspect reinforcing prior to grouting.
2. Remove mortar from exposed reinforcing steel.
3. Cells containing embedded bolts or anchors shall be filled with grout 4" above and 4" below bolt or anchor.
4. Grout beams over openings in continuous operation.
5. Tops of unfilled cell columns, under masonry beams, shall be covered with metal lath embedded in mortar joints.

E. Workmanship:
1. Execute work in best workmanlike manner and in full compliance with applicable building ordinances.
2. Lay masonry true, level and plumb in accordance with plans.

**3.02 PROTECTION, CURING, AND CLEAN UP**

A. Protection:
1. Protect masonry and other work from mortar dropping or other damage. Should smear or spatter occur, clean with clear water and fiber brushes immediately after initial set of mortar joints, and within two hours.

2. Protect tops of unfinished masonry from rain by using reinforced waterproof paper or plastic sheets, draped over top and secured hanging down each side not less than two feet.

B. Curing:
1. Do not saturate with water for curing.
2. Keep masonry subjected to extreme hot weather or hot winds damp for three days with nozzle regulated fog spray sufficient to moisten masonry face without causing water to flow down face of masonry.

C. Clean Up:
1. Repair damaged masonry and clean, using clear water and stiff non-metallic brushes.
2. Carefully fill with mortar all voids between masonry and between masonry and other materials.

**END OF SECTION**